

REMARKS

Applicants have carefully considered the June 16, 2004 Office Action regarding the above-identified application, and the amendments above together with the remarks that follow are presented in a bona fide effort to respond thereto and address all issues raised in that Action. The specification has been amended to correct minor grammar and spelling errors. Applicants have amended the elected claims to overcome informalities noted in the objection and to generally improve clarity. Applicants have also amended claims 1, 9 and 12 to more clearly distinguish over applied art. Unless specifically referenced in traversal of an art rejection below, it is believed that revised claim language only provides improved grammar or clarity and as such does not narrow the scope of any amended claim. Care has been taken to avoid entry of new matter. Prompt favorable reconsideration of this amended application is requested.

Non-elected claims 10, 11, 13 and 14 have been cancelled. Of course, Applicants reserve the right to file one or more divisional applications to pursue the subject matter of the non-elected claims.

The Examiner objected to the “optical switch” language of the claims, on the ground that the claims were confusing as to whether the equipment included an optical switch (singular) or a plurality of optical switches. It is intended that the independent claims cover equipment or methods, in which the equipment includes one or more optical switches. The embodiment of Fig. 2 utilizes one optical switch 140, whereas the embodiment of Fig. 3 utilizes a plurality of optical switches 145-0 and 145-1. Hence, the independent claims have been revised above to consistently refer to “at least one optical switch.” Dependent claims 5 and 6 are intended to cover the embodiment of Fig. 3 and have been amended to clarify that “said at least one optical switch comprises a plurality of optical switches.” To insure definiteness by providing grammatical/numerical consistency, the

elected claims have been further amended to clarify some of the references to terminals, signals, interfaces, routes, etc. It is respectfully submitted that the various clarifying amendments do not narrow the scope of any of the amended claims, particularly with respect to the scope of the original wording if properly interpreted in light of the supporting disclosure.

Applicants not with appreciation that the Examiner indicated claims 2, 4, 6, 8, 15 and 16 would be allowable, if amended to address the formal objection. In view of the amendments to clarify these claims, the formal objection should be overcome. Hence, claims 2, 4, 6, 8, 15 and 16 now should be allowable.

Although on somewhat different grounds, the Office Action rejected claim 9 and rejected claims 1, 3, 5 and 7, all under 35 U.S.C. §103, as unpatentable over U.S. Patent Application Publication 2002/0021857 to Eng et al. (hereinafter Eng). Claim 12 was rejected under 35 U.S.C. §103 as unpatentable over Eng in combination with Japanese Publication 11-289295 to Asahi. Applicants have amended independent claims 1, 9 and 12 to more clearly distinguish over the applied Eng and Asahi documents, and Applicants therefore assert that the rejected claims are now patentable over those documents. Before addressing specific claim limitations, however, it may be helpful to briefly consider the subject matter of this application.

As disclosed in the present application, switching equipment 100 (Fig. 2) or 100' (Fig. 3) in the form of an add/drop multiplexer or a cross-connect receives an optical signal from a terminal A or the like over a fiber 300 (a 'second route'). In that equipment, a distributor bridge 180 splits the received optical signal into two duplicate copies thereof, for duplex transmission, that is to say for transmission in opposite directions or routes R0 and R1 through the rings of the network 10 (Fig. 1). Routes are set through one or more optical switches in the equipment, to enable transport of the duplex copies of the received signal (split signals) over fibers 200 going to other switching

equipment (two outgoing 'first routes'). Attention is directed to the description in the paragraph (1) starting in line 23 of page 10 of the specification (see also lines 16-20 of page 14). This splitting and routing provides desirable redundant transmission (via R0 and R1) through the network, because two copies of the same original optical signal component take two different paths through the network, from the ingress equipment to the egress equipment (e.g. from 100-1 to 100-10 in the example of application Fig. 1). If a fault occurs in one path, the signal from the other path still reaches the egress equipment.

At a network node providing a link to the destination (e.g. at 100-10), switching equipment receives the duplex transmitted copies of the signal via two of the fibers 200 from other switching equipment (two incoming 'first routes'). In this switching equipment, routes are set through one or more optical switches, to enable transport of the received duplex copies of the signal to a selector 185 associated with a fiber 300 (another 'second route') going to the destination. The selector 185 selects one of the duplexed optical signals, typically the better signal, and then outputs the selected signal to associated fiber 300 for transport to the destination, e.g. to the terminal B or the like. Attention is directed to the description in the paragraph (3) starting in line 19 of page 11 of the specification (see also line 21 of page 15 to line 5 of page 16). Of course, in a network providing full two-way communications to end users (e.g. A or B), any node will be both an ingress node and an egress node; and any such node will include elements for splitting signals received from second routes and selecting one signal (from two or more) for output to each of the second routes.

Neither the Eng patent alone nor Eng in combination with the Asahi document provides the disclosed splitting, redundant routing over at least two first routes and selection of one of the redundant signals for output to a fiber to a destination second route. Eng provides dense wavelength division multiplexing (DWDM) and attendant demultiplexing. However, this corresponds to the

functions of the Applicants' multiplexers 120 and demultiplexers 160 of Applicants' equipment, which is separate and distinct from the splitting and selection elements discussed above. The DWDM processing of Eng does not provide the splitting, redundant inter-equipment routing and signal selection, as in the present case. DWDM demultiplexing provides separate component signals, not duplicates or copies "split" from a signal input and consisting of the same component. DWDM multiplexing in turn, does not select one of a plurality of signals, it combines multiple wavelengths into one composite optical signal output. Asahi also fails to teach splitting and redundant path routing of the split optical signals. It is believed that each of independent claims 1, 9 and 12 now specifies various distinctions regarding these disclosed operations, which patentably defines the respective claim subject matter over the applied Eng and Asahi documents, as discussed specifically below.

In the equipment of claim 1, for example, each interface at an optical signal receiving side has means for splitting the optical signal received from a second optical transmission route into a plurality of optical signals. This corresponds to the splitting function of one of the distributor bridges 180. The DWDM demultiplexing of Eng does not satisfy the claim requirement for splitting. As claimed, the switch or switches are controlled to provide different routes for the split optical signals, so as to supply those signals to different first optical transmission routes to other equipment. In the disclosed example, the internal switch routing connects two split signals to the fibers of the redundant inter-node routes R0 and R1. In Eng, there is no redundant transport of two signals having the same component over two different inter-node transmission routes, therefore, the internal switching does not provide the different internal routes to the relevant transmission fibers as claimed. The claimed equipment also includes second interfaces at an optical signal transmission side, and each of these interfaces includes means for receiving plural optical signals from different

first optical transmission routes (e.g. from redundant routes R0 and R1 in the disclosed example) and selecting one of the optical signals to output to the associated second optical transmission route. The selecting function of this later means corresponds to the function of one of the disclosed selectors 185. The DWDM multiplexing of Eng combines signals of different content and wavelength and as such does not satisfy the claim requirement for selecting.

In view of these differences, it is submitted that claim 1 patentably distinguishes of Eng. The mere use of multiple switch modules, as alleged to be obvious in the rejection of claim 1, would not lead to a modified switching equipment that satisfies the above noted limitations of claim 1. Claims 3, 5 and 7 depend from claim 1 and should be patentable for at least the same reasons. The rejection of claims 1, 3, 5 and 7 therefore should be withdrawn.

Claim 9 is a method claim and specifies the splitting and selecting features in a somewhat different format. In this claim, the method entails switching routes of at least two optical signals received from different first optical transmission routes that are destined for one of the fourth optical transmission routes, and selecting one of those received optical signals for output to the one fourth optical transmission route. These steps correspond to the disclosed routing of redundant signals from the R0, R1 paths through the switch or switches to a selector 185 and selecting one of those signals for output. As noted above, Eng does not disclose redundant routing, hence, there is no switching of two or more signals for a destination through to a selector. Also, there is no selection of one of the two or more signals for output to the link to the intended destination.

Claim 9 also includes steps relating to splitting a received signal, routing the split signal through the switch or switches and outputting the split signals to different third optical transmission routes. These steps correspond to the splitting and internal routing to redundant paths, for signals to be added to the inter-node transport. As noted above, Eng does not provide redundant transport.

Hence, there is no splitting and switch-routing of split signals to two different optical transmission routes as claimed.

The rejection of claim 9 (paragraphs 10 and 11) essentially alleges that the ability of the Eng switch to output signals from the optical network or the packet switch either to the optical network or the packet switch, would lead one of skill in the art to route “split” optical signals to different optical transmission routes. The “split” signals referred to in the rejection, however, are DWDM signals demultiplexed on an input side. Such signals are not copies of a single component signal split from a common source optical signal, in the manner required by the properly construed claim language. As a result, the allegedly obvious modification of Eng would still not result in a method of operation that includes the splitting and switching of the split signals, as in claim 9.

In view of these differences, it is submitted that claim 9 patentably distinguishes over Eng, and the rejection of claim 9 therefore should be withdrawn.

Claim 12 specifies splitting a received optical signal and transmission of the split signals over different optical transmission routes to other equipment. It is respectfully submitted that neither Eng nor Asahi teaches redundant transmission, therefore neither teaches splitting of signals and transmission of the split copies over different optical transmission routes to other equipment. Hence, the combination of Eng and Asahi would not satisfy the claim requires of splitting and transmitting the split signals over different routes. To drop a received optical signal, a plurality of signals from routes from other equipment are switched to one of the second interfaces, which selects one of those signals for output. It is respectfully submitted that such switching and selection is not disclosed or obvious in view of the combination of Eng and Asahi. In view of these differences, it is submitted that claim 12 patentably distinguishes over Eng and Asahi, and the rejection of claim 12 therefore should be withdrawn.

It is noted that the Action included a statement of reasons for allowance (paragraphs 35 and 36). Entry of that statement should not be construed as any acquiescence or agreement by Applicants in the stated reasoning. The claims in question were allowed on the first Action, without rejection and without comment by Applicants. Also, the statement paraphrases some of the language of claim 2 but does not exactly track the language thereof, hence, the statement should not be used to construe the scope of claim 2. Also, although claims 15 and 16 were allowed at the same time, they were not separately addressed in the statement, even though 15 and 16 are independent claims of scope that different from claim 2. Therefore the statement should not be viewed as an interpretation of claim 15 or claim 16. Each claim should stand on its own merits. For at least these reasons, allowable claims 2, 4, 6, 8, 15 and 16 should be entitled to the broadest reasonable interpretation and broadest range of equivalents that are appropriate in light of the language of those claims and the supporting disclosure, without reference to the statements of reasons for allowance.

For reasons discussed above, it is believed that claims 1, 3, 5, 7, 9 and 12 patentably distinguish over the art. Claims 2, 4, 6, 8, 15 and 16 also should be patentable, in view of the clarifications made to overcome the formality objection and the indication of allowable subject matter in the Action. Hence, all of the elected claims examined in this case should now be in condition for allowance.

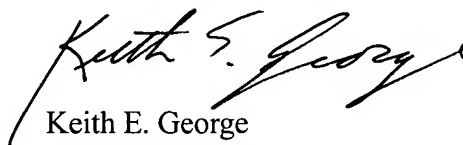
Applicants respectfully request a prompt favorable reconsideration of this matter. It is believed that this response addresses all issues raised in the June 16, 2004 Office Action. However, if any further issue should arise that may be addressed in an interview or an Examiner's amendment, it is requested that the Examiner telephone Applicants' representative at the number shown below.

Serial No.: 10/082,135

To the extent necessary, if any, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read "Keith E. George", is written over the printed name.

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